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ABSTRACT

This monograph is one in a series of semiannual reports on research related to reading in secondary schools. The six papers in the monograph deal with the following topics: (1) the effect of reading level on the retention of propositions by secondary school remedial reading students; (2) the ambiguity of the term "significance" in research, which necessitates some measure of association (correlation) in addition to statistical significance tests; (3) an analysis and a position statement on the training of teachers in secondary school reading; (4) an approach to analyzing reading comprehension that combines skills areas and concept level questions; (5) a basic teaching strategy (the language shaping paradigm) for improving language, comprehension, and thought; and (6) reading comprehension of anaphoric syntactic structures by bilingual Vietnamese high school students. (RL)

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RESEARCH ON READING IN SECONDARY SCHOOLS

A Semi-Annual Report

Monograph Number 7

Edited by

Patricia L. Anders
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SPRING, 1981

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PURCHASE OF MONOGRAPH

This monograph is the seventh in a series of semi-annual reports of research related to reading in the secondary schools. This monograph has been funded by the Reading Department of the University of Arizona for the primary purpose of disseminating research findings to professionals in reading who are interested in improving the reading ability of adolescents.

The first four issues of this monograph are available through ERIC; number 1, ED 177-509, number 2, ED 177-510, number 3, ED 184-052 and number 4, ED 191-004. Issues 5 and 6 are available through the Department of Reading at a cost of $3.50 per monograph. Issue 7 is available at a cost of $4.00. Checks should be made payable to the Reading Research Monograph and forwarded to the University of Arizona, Tucson, Arizona, 85721.

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SUBMISSION OF MANUSCRIPTS

This monograph series is planned and published as a non-profit enterprise by faculty and doctoral students in the Reading Department at the University of Arizona. Each article submitted is independently reviewed by at least three members of the editorial board. Subsequent issues are planned that will include specific research studies, theoretical papers that emphasize a need for research, and reviews of literature. Articles that deal with any of these areas are being actively solicited if they (1) are of interest to reading professionals on the secondary level, (2) are primarily directed to research, and (3) have not previously been published elsewhere. It is intended that this monograph reflect, not dictate, the trends and interests of reading professionals in secondary education. Please do not hesitate to submit manuscripts which share ideas, research, or experiences that might encourage others to build upon your work and ideas. Send manuscripts by October 15 to be considered for fall publication.

One unique aspect of this series is that the editorial board is particularly interested in receiving papers from doctoral students and from assistant professors. It is our belief that many of the professionals in these categories do not publish their research findings because of a perceived and existing difficulty of "breaking into the publishing game." We hope to encourage "first-time" authors by providing such an opportunity and encourage such prospective authors to submit papers or questions to the editors.

The response to our effort has been most gratifying. As you may well appreciate, the production and dissemination of a new publication is hardly an easy task. In fact, as we succeed, the task becomes increasingly more complex. Our future success depends upon the degree to which our colleagues join us in generating research and in reporting their findings.

P.L.A.

ACKNOWLEDGEMENTS

A debt of gratitude is owed Dean Robert F. Paulsen, College of Education, for his continued encouragement in the production of this monograph.

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Special thanks is also due to Mrs. Joyce Jackson and Ms. Laurie Deurloo and her fine support staff for the preparation of this issue.

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FROM THE EDITOR

About This Issue

As editor of the Research on Reading in Secondary Schools, I was very pleased to receive manuscripts for this publication from members of a research group that I thought subscribers to the monograph might be interested in knowing about. The group, known as the "Secondary Reading Researchers" are loosely associated with the National Reading Conference. They meet each December, during NRC, to share and critique their work. If you would like more information about this group, contact:

Dr. Joseph L. Vaughan, Jr.
College of Education
East Texas State University
Commerce, Texas 75428

Interchange

Guess what? I still have the five qustions about the audience of the monograph that I had while preparing the sixth monograph! Remember, I was wondering:

1) who comprises the audience?

2) why do you order the monograph?

3) what expectations do you have for this publication?

4) are your expectations being met? and,

5) how could more researcher/educators be encouraged to submit their work to the monograph?

I would really appreciate any responses to these questions in order to establish a dialogue between myself and you, the subscriber.

In addition, I look forward to your reflections and reactions on any of the research or ideas presented in the monograph.

Secondary education generally and Secondary reading specifically are nose-to-nose with some very difficult issues. Educators need to confront these issues. Some of the issues, from my perspective, include censorship, readability, text selection and accountability. What are the issues as you see them? What are the arguments involved? What needs to be done? It is our hope that "Interchange" might become a forum for confronting some of these and other issues.

So, "Interchange" is an opportunity to reveal yourself as a subscriber, to reflect upon ideas and research reported here, and to confront issues. Do write.

Patricia L. Anders

The Effect of Reading Level on the Retention of Propositions by Secondary Remedial Reading Students

Beth Evans
Cheyenne, Wyoming

Introduction

In the last several years the emphasis on readability has sent many a secondary teacher back to his/her classroom with a readability graph and has encouraged publishing companies to employ computerized readability packages in order to market more saleable textbooks.

In order to conform to the readability criterion, shorter sentences and easier words are two major factors frequently emphasized. However, shorter sentences can make a message more difficult to understand and less like natural language (e.g., "See Spot run."). For example, a third grade story might read:

> In the Southwest United States lives a bird two feet tall. He does some funny things and has many names. He thinks it is fun to jump out in the road and race. He will race with a horse, a runner, or a car. (four sentences)

On the other hand, the same story written at a sixth grade level would read:

> In the Southwest United States there is a bird two feet tall with some remarkable habits that have won him many names. He thinks it is fun to jump out in the road and run a race with a horse, a team, or even a car. (two sentences)

Selecting words from an easy or common word list is also used in readability standards to create an easier-to-read passage; yet, easier words do not always convey the same conceptual message. For example:

Paper presented to the Secondary Reading Research Group, National Reading Conference, San Diego, 1980.

'line' for 'boundary'; 'funny things' for 'remarkable habits'; and 'jump' for 'pounce'.

Remedial reading students at the secondary level are often confronted with materials printed in large, bold print and written in a "pre-primer" fashion. The short sentences and use of "easy' words from a common vocabulary list create a story with choppy sentences and language patterns unnatural for a teen-ager. Is it better to use material supposedly written at a level commensurate with the students' tested reading level? Or, can these students grasp and retain the meaning of stories written at a slightly more difficult level and using a more natural flow of language?

Purpose

The purpose of this exploratory study was to examine the immediate and delayed retention of secondary remedial reading students who read either a third or sixth grade version of the same story. Additionally, this investigation sought an understanding of the importance of using materials supposedly written at a grade level commensurate with the tested reading ability of the students.

Propositional analysis, as promoted by Kintsch (1974), was used as the method of evaluating what information the subjects acquired and retained. A comparison between the representation of the underlying meaning of the passages and the subjects' recall protocols provided the measure of comprehension. This method has been found to be a relevant and feasible way of studying children's comprehension of natural prose (Drum and DeFratis, 1976; Evans, 1977).

The story used was originally adapted, rewritten, and analyzed in the Evans, 1977, study. "Road Runner" was adapted from an elementary grade

school book and rewritten according to traditional readability standards at two grade levels of difficulty--third and sixth grade. The propositional analysis showed this story to be unique because of its equivalent amounts of both superordinate and subordinate major propositions and its lack of subordinate minor propositions. The proposition components noted as facilitators of language comprehension in previous research are predominant in the textual description of the "Road Runner"--1) fewer different arguments and, therefore, a tighter hierarchical structure in which the propositions are located in just a few levels and 2) repetition of word concepts (Kintsch, 1972, 1974, 1976; Kintsch and Keenan, 1973; Kintsch, Kozminsky, Streby, McKoon, and Keenan, 1975; Drum and DeFratis, 1976; Evans, 1977).

Two factors of the subjects were considered: grade level (9th, 10th, 11th, and 12th) and reading level (3rd, 4th, 5th, and 6th). The experimental situation involved both immediate and delayed (24 hours) recall.

Theoretical Framework

Our understanding of what we read and hear is determined in part by the comprehensibility of a message. The structure of text has been studied in terms of language variables which serve as predictive indices of the message's level of difficulty (Klare, 1974): readability formulas, the cloze procedure, vocabulary load, noun frequencies, etc., have been analyzed in the attempt to identify the important elements of language. The common factor among all these approaches has been the examination of the surface features of a message. However, the words and sentences alone are full of ambiguous meanings and are not retained as such entities, but rather

integrated into the context of a larger discourse. Although the physical characteristics are more commonly used and more easily measured, we need to look beyond the visible part of language in order to study its meaning.

In recent years theorists from various fields have provided semantic networks representing the text structure of a passage as a tool with which the stimulus text and a subject's free recall responses can be compared. Such methods allow the researcher to define the structure of a message, examine its effect on language comprehension, and report a qualitative, as well as quantitative, evaluation of a subject's reconstruction of a message (i.e., the information acquired from text).

Generally, texts are considered to be "derived from semantic networks or sets of interrelated propositions" (Trabasso, 1975: 14) and are the basis for examining the relationship between the semantic information contained in a text and the information acquired by the reader. Models such as the one proposed by Kintsch (1974) provide an analysis of the underlying structure of a text which results in a semantic network or "graph consisting of semantic 'tokens' or 'concepts' which are connected by relational links" (Fredericksen, 1975: 144).

Kintsch (1972) hypothesizes that semantic memory is formed from a propositional base structure and such a base can be constructed from the cues available in the text's surface structure. Propositions are considered "the basic units of meaning" (Kintsch et. al., 1975: 196) and consist of n-tuples of word concepts, one of which serves as the predicator or relational term while the others serve as arguments (Kintsch, 1974).

Employing the verb as the core of the proposition and relational terms based on Fillmore's (1968) case grammar, Kintsch's propositional analysis of a text is demonstrated in Appendix A. In diagramming the text base,

each proposition is written on a separate line and numbered for easy reference. Indentation of the propositions indicates the level or rank of the propositions within the text hierarchy. The levels are defined as superordinate, i.e., those propositions "that introduce new arguments into the text," and subordinate, i.e., those propositions that "repeat the arguments of the higher level propositions" (Kintsch, 1976: 8).

The propositional analysis of text has been used by Kintsch and his colleagues (1972, 1974, 1975, 1976), Drum and DeFratis (1976), Evans (1977), and others and have demonstrated:

1. the probability of recall was affected by the rank or position of the proposition in the text hierarchy;
2. the relationship between the levels of propositions become further differentiated over time and indicated that the rate of forgetting increases with the level of the proposition;
3. passages with fewer different arguments have more repetition because of the additional embedding of propositions as arguments of other propositions;
4. repetition of word concepts, that is, the old familiar elements of a text, are easier to process and remember; and
5. readability formulas failed to accurately determine the comprehensibility of messages.

Procedures

Thirty-two subjects, two at each reading level nested within grade level, were randomly assigned one of the two experimental stories. The subjects' reading level was measured by the Stanford Diagnostic Reading Test, Brown Level, Form A.

Each subject was examined individually and given a practice story. The subject was then asked to read the experimental story and record what he/she remembered about the passage. Each subject was seen for a second session approximately 24 hours after the first. During the delayed recall

session, the subject was asked what he remembered about the story. The subjects' immediate and delayed recalls were analyzed according to the propositional method and compared with the original texts.

The subjects used in this study were students at an alternative high school. For the most part, they are "hard core" students who had either dropped out or been pushed out of the traditional schools. While the students in the school, reading class, and study are almost equally divided among sex and ethnic (Chicano and Anglo) classes, they are almost all from the low socio-economic status.

Analysis of Data

The experimental design used in this study was a 4x4x2 factorial design employing a mixed-effects model. The between subjects design included the following variables: grade, reading level, and story. Two sets of dependent measures were obtained at two different time points.

Multiple analyses of variance, using the SPSS Anova computer program (Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975), were used to analyze the data. A separate analysis of variance was used for each dependent measure. Each F-ratio was tested for significance with alpha equal to .01.

Main Findings

Very few of the analyses were significant and Table A in Appendix B is an example of the non-significant F Tables. Table I displayes the non-significant means and standard deviations for both experimental stories. With the exception of the total number of propositions stated, the immediate recall appears almost identical. However, the delayed recall data shows a slight, non-significant difference in favor of the sixth grade story.

Table I

Means and Standard Deviations

	Story 3		Story 6	
	$\bar{X}$	SD	$\bar{X}$	SD
Immediate Recall				
# of Propositions Stated	16.75	12.59	19.19	10.06
% of Available Propositions Recalled	20.13	15.20	19.19	10.06
% of Superordinate Propositions Recalled	22.69	15.48	22.25	11.73
% of Subordinate Major Propositions Recalled	17.25	15.53	16.23	9.86
Delayed Recall				
# of Propositions Stated	10.36	7.96	14.50	9.13
% of Available Propositions Recalled	12.44	9.62	14.50	9.13
% of Superordinate Propositions Recalled	14.38	9.98	17.25	11.89
% of Subordinate Major Propositions Recalled	9.69	9.69	11.75	7.55

Although the results were not significant, some consistent patterns did appear across all the dependent measures. Eleventh graders remembered more immediately after reading, while ninth graders retained more information over time (Figures 1 and 2). In both cases there was a slight, upward progression among three of the four grade levels. The tenth and eleventh graders did not seem to retain as much of the original information over time as did ninth and twelfth graders.

Figures 1 and 2

Subjects at the ninth, eleventh, and twelfth grade levels seemed to have a slight, non-significant difference in favor of the sixth grade story immediately after reading (Figure 3). However, twelfth graders were the only grade level who maintained this preference in the delayed recall measures (Figure 4). In fact, the large difference between the two stories

by tenth graders completely disappeared over time. Again, ninth graders appeared to be retaining more information no matter what story they read.

Figures 3 and 4

The few significant analyses, and those that approached significance, dealt with the subjects' reading level. Immediately after reading a story, subjects reading at the fourth grade level, no matter what their assigned grade level, acquired more information (Figure 5; Appendix B, Table B). With the exception of the drop by twelfth graders reading at the sixth grade level, those subjects reading at fourth and sixth grade level did much better than those reading at third and fifth grade levels (Figure 6). Across all the dependent measures, those subjects reading at a fourth grade level showed a significant preference for the easier story (Figure 7; Appendix B, Tables C, D, E, and F).

Figures 5, 6, and 7

Even those results that were significant during immediate recall were not maintained over time, although the delayed recall patterns do show some of the same patterns as those from immediate recall. Again, those subjects reading at a fourth grade level, particularly ninth graders, retained more information (Figures 8 and 9). However, the preference for the easier story almost completely disappeared (Figure 10). In fact, a slight, non-significant preference was shown for the more difficult story.

Figures 8, 9, and 10

Conclusions

The lack of significant differences did not help explain the level of reading material most suitable for use with secondary remedial reading students. However, this lack of significance might also indicate that materials with a range of difficulty can be used with these students without pushing them to their frustration level. That is, a tenth grade student reading at a third grade level might be able to handle materials written at the "upper elementary" level (i.e., third through sixth grade levels of difficulty) rather than material written just at the third grade level of difficulty.

Generally, the lack of significant differences between the two stories suggests that the subjects had no more difficulty grasping and retaining information from the sixth grade story than from the third grade story. While this leaves the question open for further investigation, one might speculate that the more natural flow of language, even when written at a more difficult level, does not impede the reading comprehension of secondary remedial reading students.

The significant results in this study were found during immediate recall among those secondary students reading at a fourth grade level. While the fourth grade is often thought of as a pivotal year in elementary school (i.e., the transition year from 'learning to read' to 'learning from reading'), why secondary students reading at that level would remember more about a story is open to speculation and may just be an artifact of this particular study.

The students reading at a fourth grade level showed a distinct preference for the easier story during immediate recall. However, that distinction completely disappeared over time; in fact, there was a slight preference for

the more difficult story during delayed recall. While the students reading at a fourth grade level maintained a non-significant superiority over the other reading levels, any differentiation between the two stories did not remain consistent and coult not be conclusive in regards to appropriate material.

Implications

In the last several years the market has been flooded with "high interest/low vocabulary" material geared toward secondary students who are reading at an elementary level. Yet, we have little knowledge as to what level of material is most suitable for these students. The traditional method of operation has been to purchase material written at a level commensurate with the students' tested reading level. However, we have all heard the older students scream, "This is too 'babyish'!" All too often the material is written in big, bold print and simplistic sentence structure. While the older students may be unable to decode words at a level equal to their grade placement, their every day use of language and post-elementary "maturity" tells them that the books have been written for "dummies" or younger students.

While this particular study did not contribute any firm information regarding reading materials, we must be able to identify what aspects of language within that "upper elementary" level, coupled with readable text, will allow these secondary remedial students to acquire information and progress in their understanding of written language.

Limitations

The small sample size may have hampered obtaining any significant results. Also, the limited number of observations prevented analysis of

a three-way interaction between stories, grade level, and reading level. Certainly a series of small studies such as this one would be more definitive in studying the level of materials suitable for secondary remedial reading students.

Only recently has this investigator used as subjects the students with whom she works on a regular basis. It was amazing, yet frustrating, to watch the students' apprehension about putting their voices and words on a tape recorder--analogous, almost, to the toilet training experience. It was further frustrating to later talk with these students about the stories and become aware that what they could verbalize to their teacher was more than what they could say on the tape recorder. This certainly leads one to question whether or not this experimental format is suitable for secondary remedial reading students. On the other hand, none of the students could have responded in writing any better than they did on the tape. Thus, the next step might be to seek a probing method suitable in obtaining the most information from secondary remedial reading students.

One aspect of the study that was affected by this particular group of students was delayed recall. In some cases, students' recall the following day may have been influenced by his/her personal problems the previous night. Since this affected a few students assigned to both stories, the cases were not discarded but the total results may have been affected.

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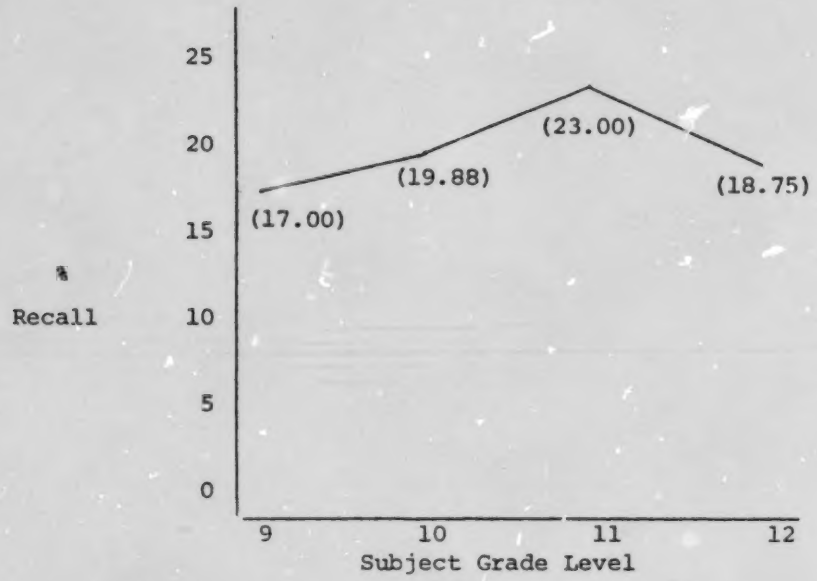

Figure 1
Immediate Recall - Percent of Total Available Propositions Recalled

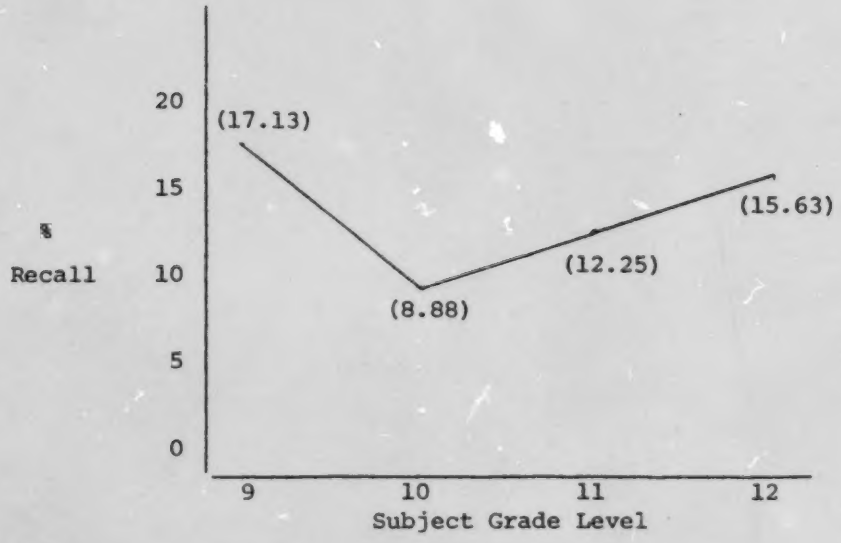

Figure 2
Delayed Recall - Percent of Total Available Propositions Recalled

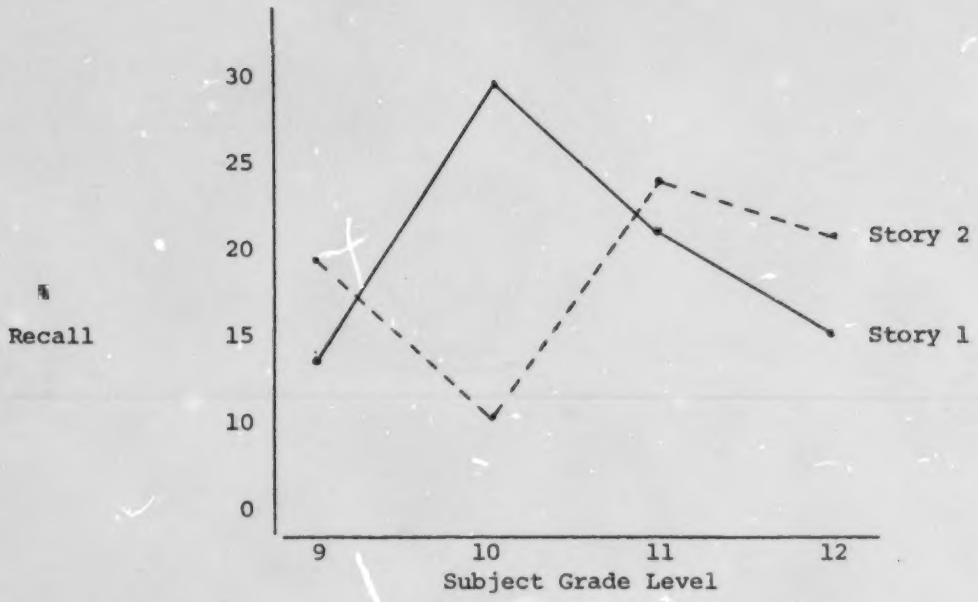

Figure 3
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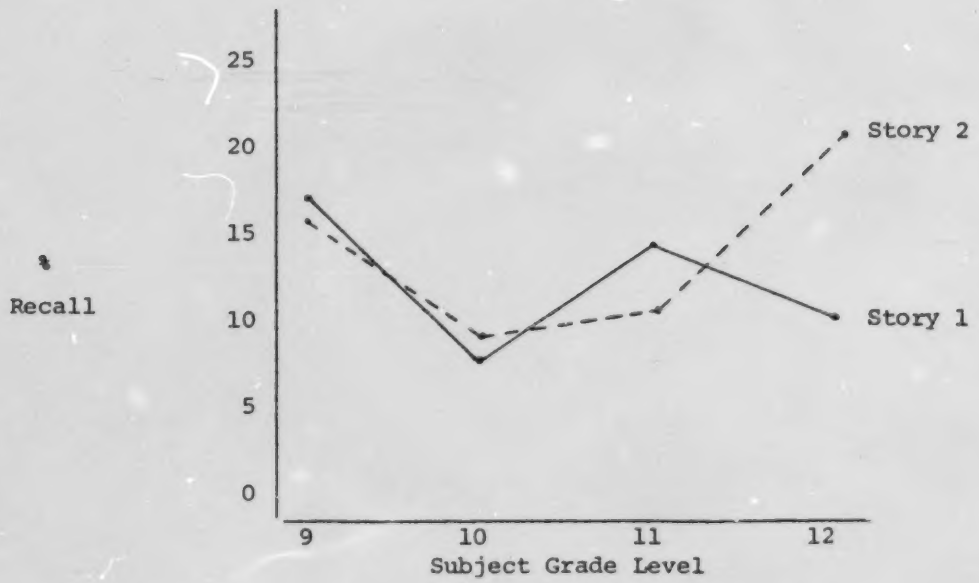

Figure 4
Delayed Recall - Percent of Total Available Propositions Recalled

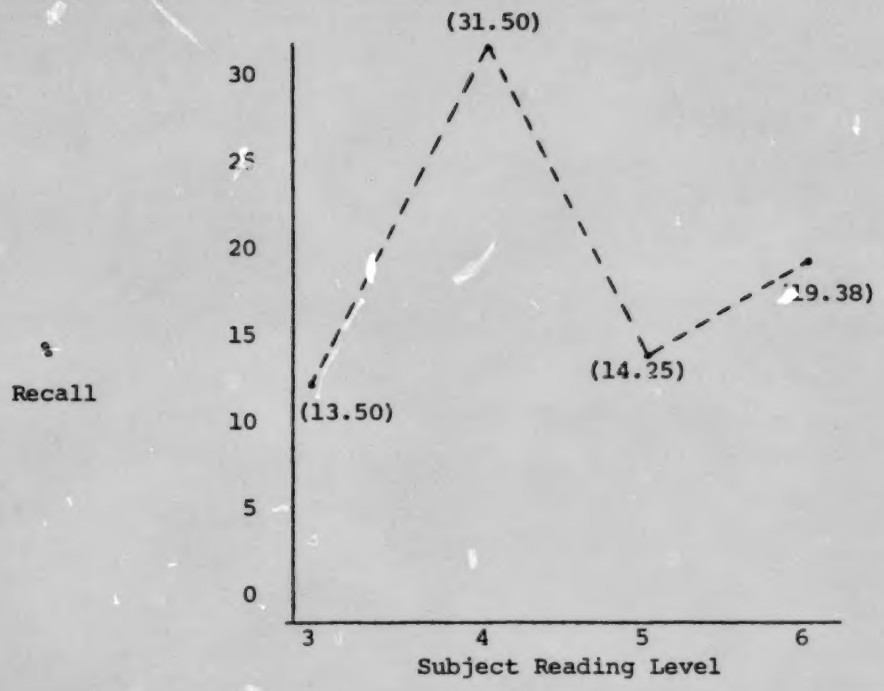

Figure 5
Immediate Recall - Percent of Total Available Propositions Recalled

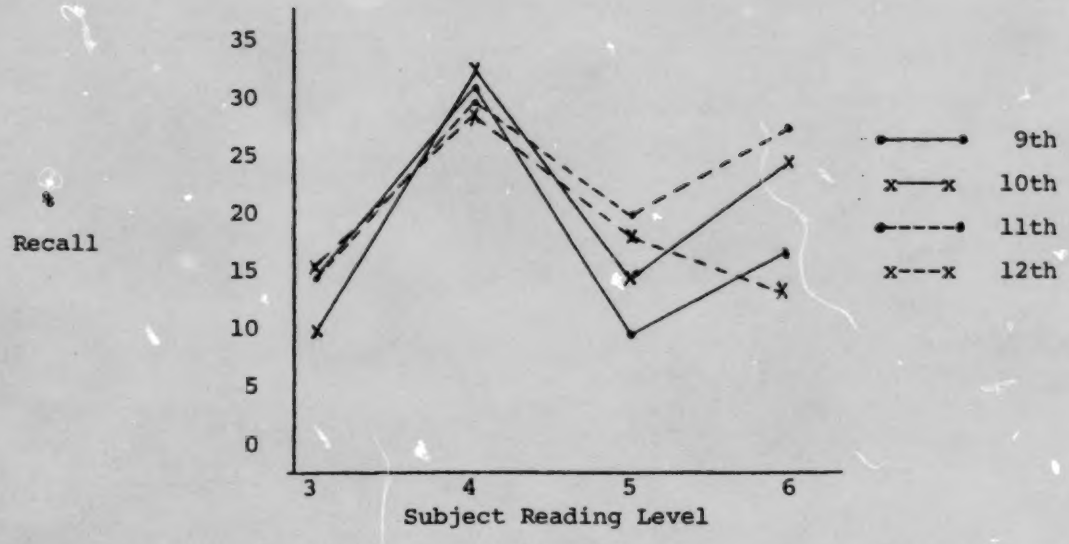

Figure 6
Immediate Recall - Percent of Total Available Propositions Recalled

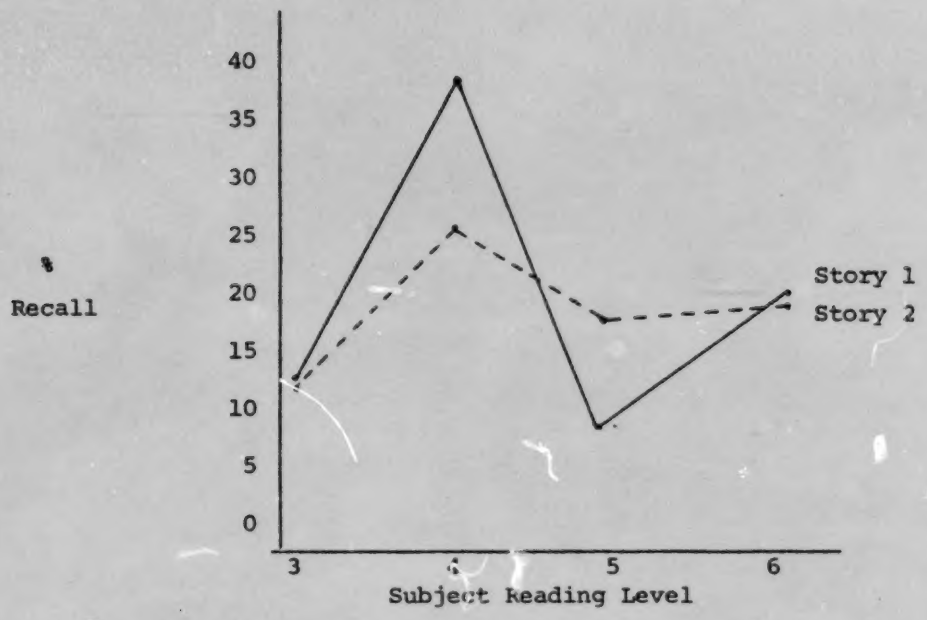

Figure 7
Immediate Recall - Percent of Total Available Propositions Recalled

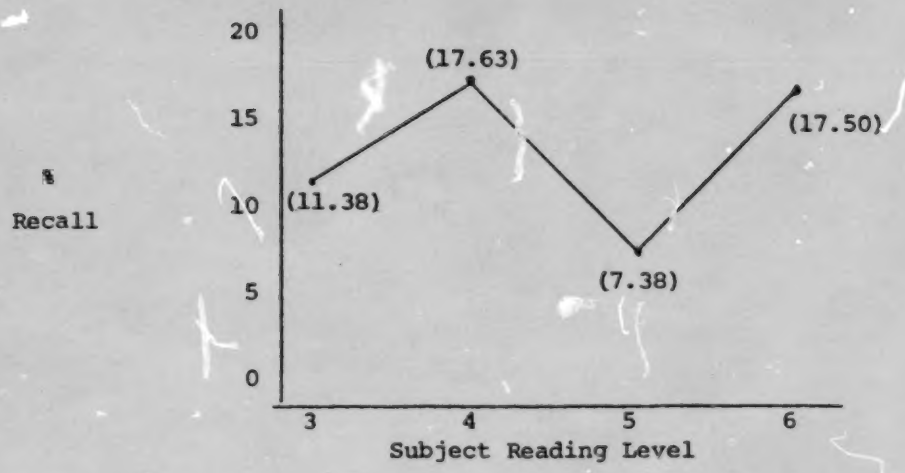

Figure 8
Delayed Recall - Percent of Total Available Propositions Recalled

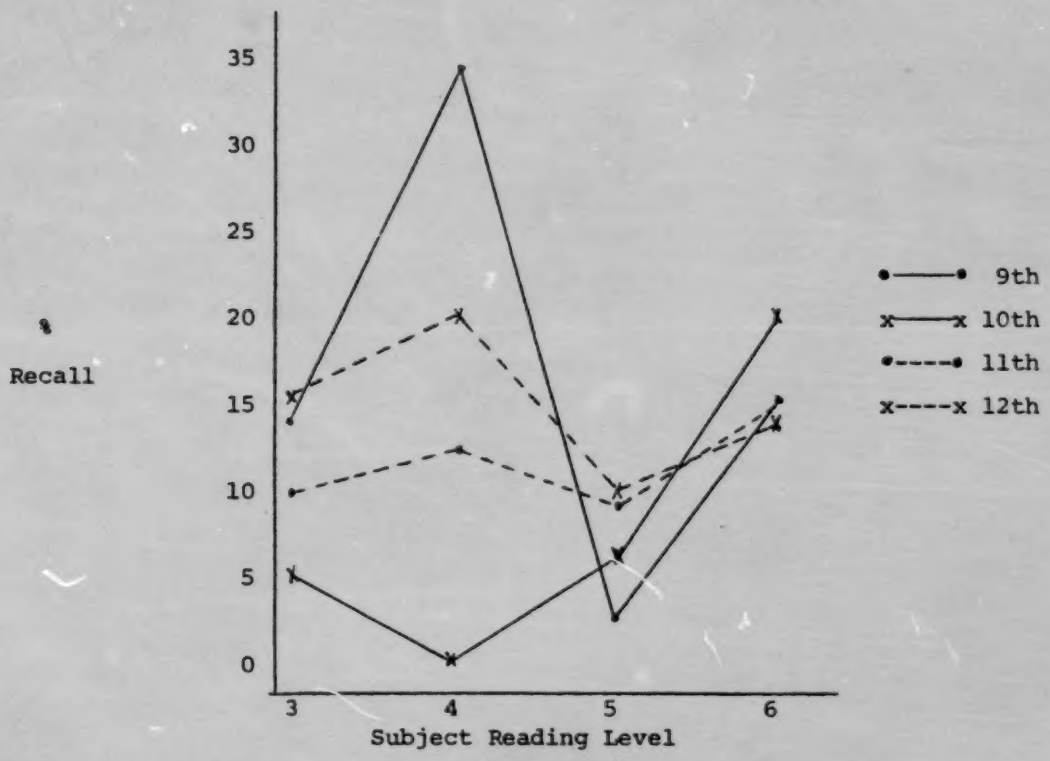

Figure 9
Delayed Recall - Percent of Total Available Propositions Recalled

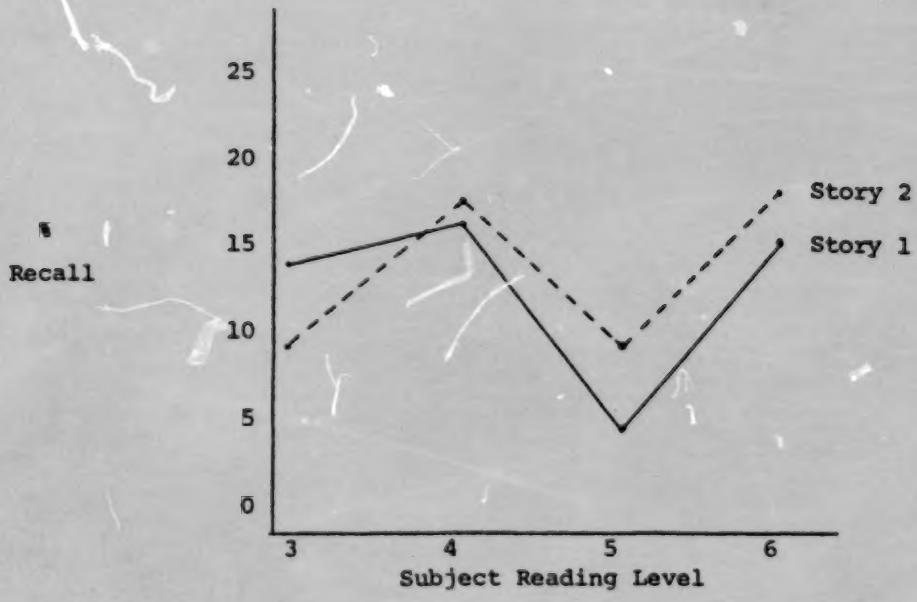

Figure 10
Delayed Recall - Percent of Total Available Propositions Recalled
18

Appendix A

Propositional Analysis

Beginning sentences from "Road Runner," Sixth Grade Version Text:

In the Southwest United States there is a bird two feet tall with some remarkable habits that have won him many names. He thinks it is fun to jump out in the road and run a race with a horse, a team or even a car.

Analysis:

Levels

1 2 3 4 5 6 7

```
1.  exists, bird
2.        LOC:  in, Southwest, U.S.
3.        has, bird, height (tall)
4.              extent of:  height (tall), 2'
5.        has, bird, habits
6.              habits, remarkable
7.                    some, 6
8.              won, habits, names
9.                    names, for bird
10.                   names, many
11.       thinks, bird, fun, 12, 13
12.       jump out, bird, in road
13.       run, bird, a race, in road
14.       SEQUENCE:  and, 12, 13
15.       run, bird, a race, with horse
16.       run, bird, a race, with team
17.       run, bird, a race, with car
18.             even, 17
19.       CONJUNCTION:  or, 15, 16, 17
```

Appendix B

Table A

Story - Immediate Recall
Number of Total Propositions Stated

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Main Effects - Story	47.531	1	47.531	0.366	0.550
Residual	3895.435	30	129.848		
Total	3942.966	31	127.192		

Table B

Grade by Reading Level
Immediate Recall
Percent of Total Available Propositions Recalled

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Main Effects	1812.687	6	302.115	1.687	0.188
Grade	152.844	3	50.948	0.284	0.836
Reading Level	1659.844	3	553.281	3.089	0.057
2-way Interaction					
Grade x Rdg. Level	315.031	9	35.003	0.195	0.991
Residual	2865.481	16	179.093		
Total	4993.199	31	161.071		

Table C

Reading Level by Story
Immediate Recall
Number of Total Propositions Stated

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Main Effects	1312.375	4	328.094	3.329	0.026
Reading Level	1264.844	3	421.615	4.278	0.015
Story	47.531	1	47.541	0.482	0.494
2-way Interactions					
Reading Level x Story	265.344	3	88.448	0.897	0.457
Residual	2365.247	24	98.552		
Total	3942.966	31	127.192		

Table D

Reading Level by Story
Immediate Recall
Percent of Total Available Propositions Recalled

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Main Effects	1666.875	4	416.719	3.469	0.023
Reading Level	1659.844	3	553.281	4.606	0.011
Story	7.031	1	7.031	0.059	0.811
2-way Interaction					
Rdg. Level x Story	443.594	3	147.865	1.231	0.320
Residual	2882.731	24	120.114		
Total	4993.199	31	161.071		

Table E

Reading Level by Story
Immediate Recall
Percent of Available Superordinate Propositions Recalled

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Main Effects	1916.125	4	490.281	3.415	0.024
Reading Level	1959.594	3	653.198	4.550	0.012
Story	1.531	1	1.531	0.011	0.919
2-way Interaction					
Rdg. Level x Story	253.094	3	84.365	0.588	0.629
Residual	3445.727	24	143.572		
Total	5659.945	el	182.579		

Table F

Reading Level by Story
Delayed Recall
Percent of Available Subordinate Major Propositions Recalled

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Main Effects	1552.500	4	388.125	3.297	0.027
Reading Level	1542.375	3	514.125	4.368	0.014
Story	10.125	1	10.125	0.086	0.772
2-way Interaction					
Rdg. Level x Story	711.375	3	237.125	2.015	0.139
Residual	2824.985	24	117.708		
Total	5088.859	31	164.157		

"Significance" in Research: What Does It Mean?

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"Are the results significant?" This question is asked in one form or another of every experimental study. However, the question is ambiguous because it has two entirely different meanings:

1. "Are the results statistically significant?" Or, stated another way, "Is there a low probability that the correlations or differences between groups are actually zero?"
2. "Are the results practically significant?" Or, stated another way, "Do the results justify modifying a current theory or adopting new instructional procedures?"

Traditionally, reports of research in education have dealt with the question of significance from a statistical perspective (Morrison and Henkel, 1970). While attention to statistical significance is not an evil, in and of itself, it is often true that researchers and practitioners beg the question of practical significance by assuming that results which are statistically significant must also be of some practical usefulness. As we will demonstrate, statistical significance and practical significance are two separate considerations.

Tests of Statistical Significance

Significance tests indicate the probability that correlations or differences between groups have been obtained by chance alone. For example, if a correlation coefficient of .32 is significant at the .05 level ($p < .05$),

there exists less than a 5% probability that a correlation of that size could have been obtained by chance alone.

Tests of significance must be interpreted with caution for two reasons. First, the number of subjects in an experiment directly influences the level of significance. Indeed, Hays (1963) tersely states, "Virtually any study can be made to show significant results if one uses enough subjects..." (p. 326). Second, levels of statistical significance can be misleading because they do not indicate the strength of a relationship between variables.

The fact that a correlation is significant at the .001 level merely indicates a lower probability that the correlation could be obtained by chance than if the correlation were significant at the .01 or .05 level. A correlation which is significant at the .001 level is not necessarily stronger, bigger, or better than a correlation which is significant at the .05 level. Significance tests simply do not measure the magnitude of relationships. For this reason, obtaining statistical significance should be only one desirable outcome of data analysis; obtaining a measure of association which has theoretical or practical merit should be another.

Measure of Association

A measure of association refers to the amount of variance in the dependent variable which can be attributed to the independent variable. In other terms, a measure of association is a statement of the magnitude of a relationship, e.g., How much does the independent variable affect the dependent variable? or How large are the differences between experimental and control groups? Coefficients of correlation such as product-moment correlations are one type of measure of association. With this statistic the size of the coefficient automatically reveals the strength of the observed relationship.

For example, the relationship between group reading readiness test scores and later performance on standardized reading tests is generally reported to be significant and to range from .50 to .60 (Spache and Spache, 1969). The size of the correlation coefficient indicates that readiness tests have a moderate ability to predict group reading achievement. Knowing that this relationship is moderate is much more informative than knowing only that it is "statistically significant beyond the .05 level."

In contrast to correlational studies, experimenters often employ t-tests and F-tests in analysis of variance to test mean differences among groups. Unfortunately, these tests do not produce a measure of association. This results in experimental studies that generally fail to report statistics describing the extent to which treatment groups differ.

There are several measures of association appropriate for analysis of variance designs (Peters and Van Voorhis, 1940; Cohen, 1965; Hays, 1963; Dodd and Schultz, 1972; and Glass, 1978). Some statisticians are concerned about which measure of association provides the most meaningful information (Glass and Hakstian, 1969; and Cohen, 1973), and others caution that the reliability of a measure of association is affected by the number of subjects in a study in much the same manner as tests of significance are affected (Carol and Nordholm, 1975). Nevertheless, a measure of association is a valuable index of the strength of the relationship between variables.

Correlation Ratio Eta (E)

The simplest measure of association--and the most useful for purposes of illustration--is the correlation ratio, eta (E) (Kerlinger, 1973, p. 227-232). As with other correlation statistics, the larger E is, the

stronger the relationship between the dependent and independent variable(s). That is, a large E indicates large degrees of difference among treatment groups. In "approximate" figures, .20 is considered small, .50 is moderate, and .80 is considered large for correlational statistics, including E.

To estimate E from an analysis of variance summary table, one needs two values, the total sum of squares and the sum of squares for each main effect and interaction. Once these values are obtained, only two steps remain:

1. Divide the sum of squares for each main effect and interaction by the total sum of squares. This yields a quotient for each main effect and interaction.
2. Compute the square root of each quotient. The resulting values are the measures of association for main effects and interactions, stated in correlational terms.

The above procedure for determining E in an analysis of variance design is a simple and straightforward technique for estimating the magnitude of a relationship. E or some other measure of association should be reported in addition to tests of statistical significance. Not to do so increases the probability of grossly misinterpreting data-based research.

A Case in Point

Soares and Simpson (1967) conducted research to determine the effect of grade in school, intelligence and sex on junior high students' ratings of interest for short stories. 1,653 seventh, eighth and ninth graders rated short stories on the basis of interest. The ratings were then treated in an analysis of variance procedure, and a summary of results, Table 1, was presented (p. 15).

Table 1

Analysis of Variance of the Average Ratings of All the Stories By the Different Intelligence, Grade and Sex Groups

Source of Variation	Degrees of Freedom	Mean Square	F	$F_{.99}$	$F_{.95}$
Grade	2	604.637	10.797**	4.60	2.99
Sex	1	111.481	1.990	6.64	3.84
Intelligence	2	197.644	3.529*	4.60	2.99
Grade and Sex	2	20.934	.373	4.60	2.99
Intelligence and Sex	2	39.119	.698	4.60	2.99
Intelligence and Grade	4	51.749	.924	3.32	2.38
Interaction	4	64.787	1.156	3.32	2.38
Within	3222	55.998			
Total	3239				

* $p < .05$

** $p < .01$

According to Soares and Simpson, "Analysis of variance results indicated that significant differences did exist when students were grouped according to intellectual ability or grade level" (p. 20). In addition, the authors offered an extensive discussion of reading interests found at the different IQ and grade levels. The general conclusion presented in the article is that intellectual ability and grade level are important determinants of reading interests for junior high students. However, we computed E for these relationships, and consequently, argue that Soares and Simpson should have made precisely the opposite case. Our purpose in doing so is not to criticize particular authors, but rather to demonstrate that tests of significance can be misleading. A closer look at the Soares and Simpson data clearly illustrates this point.

First, we calculated the sum of squares for the Soares and Simpson study. To do this, we multiplied each Mean Square by its respective Degrees of Freedom. For example, from Table 1 the sum of squares for Grade is 2 x 604.637 = 1209; the sum of squares for Sex is 1 x 1111.481 = 111; and the sum of squares for Intelligence is 2 x 197.644 = 395. Adding all the sums of squares for each main effect, interaction, and error term gives a total sum of squares of 182.727. Then, following the procedure outlined earlier, we computed E and found the correlation ratio between intellectual ability and students' interest ratings to be only .05, and the correlation ratio between grade level and interest to be only .08. Since a correlation of .20 is considered small, these values are miniscule. Indeed, in this study intellectual ability accounts for a mere one fourth of one percent of the variance in students' reading interest ratings; junior high grade level accounts for less than two thirds of one percent of the variance! The results of the Soares and Simpson study are statistically significant only because they are based upon thousands of observations.

Having investigated the above measures of association, we can only conclude that intelligence and grade are virtually useless for explaining the different interest ratings found in the Soares and Simpson study. The results of our calculations indicate that the effects of intellectual ability and grade level upon junior high students' reading interests are microscopic and, in our opinion, of no practical significance.

Conclusion

As we have demonstrated, the term "significant" is ambiguous. In order to avoid this ambiguity, researchers should present some measure of association in addition to statistical significance tests. This presents both researchers and consumers of research with a more meaningful perspective. The Soares and Simpson study illustrates that measures of association are a necessary supplement to tests for statistical significance and that such estimates should be prerequisite in studies with large numbers of subjects.

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A Pilot Survey Analysis of, and a Position Statement on the Training of Teachers in Secondary Reading

Subtitle: an attempt to ascertain whether practices discussed in research studies are being introduced to teachers.

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We have wondered the extent to which content area reading programs are addressing to more than the narrowest of definitions of reading skills. We hoped to realize this, not from professor talk, which is bound to include expansive statements, but from what actually is taught and tested in training courses. Our results must be considered largely impressionistic rather than empirical, due to limited sample size and our unreserved bias that a narrow definition of reading is counter-effective for the need and situation at the secondary level.

In short form (extended ahead), our position is that secondary reading has been hemmed-in by the principles and precepts of elementary reading. Even cursory consideration of the secondary school situation suggests the need for a more encompassing definition of reading, one which includes thinking, language, and social-emotional maturity. Our attempt to ascertain whether these elements are present in secondary or content area reading courses stems from an honest attempt to draw attention to the need and to be a party to those factors which might come to influence thought and practice in the eighties.

Paper delivered at National Reading Conference, December 3, 1980.

Twenty universities were selected to be surveyed. These were chosen because we believed them to represent a broad range of influence on the field; factors such as the size of their doctoral programs and publication productivity were given the most weight, though other less tangible considerations were taken into account as well. Forty percent responded. Thus, data collection for the survey was derived from materials used in eight major institutuions of higher learning. From these eight programs in content area or secondary reading, we evaluated 12 course outlines, eight tests, and seven texts. The analysis of these data, despite a small and possibly bias sample, at this pilot level, seemed justified, on the grounds that any data base, which was not intentionally biased by the investigators, was better than none in trying to get a purchase on a more formidable method for investigating something as elusive as trends in a field.

The content of the outlines, tests and texts was classified according to four broad descriptive categories:

1. Reading "tools of the trade:" readability, reading levels, assessment, reading rates, decoding skills, the reading program, comprehension skills, text analysis
2. Conceptual-cognitive aids: study guides, DRTA, learning-reading process, study skills
3. Language development: vocabulary, listening, speaking, writing procedures
4. Elements to promote social-emotional growth

Extended Position Statement

The practices and approaches that are valuable in teaching reading in the elementary grades are not sufficient, in and of themselves, to help secondary students to read and process information in the content areas.

In examining teacher education in secondary reading, we sought approaches which went beyond such traditional practices and probed the issues that relate to a maturing student struggling with complex subject matter. We directed our search toward evidence of cognitive, language, and social-emotional dimensions of reading and learning. It is our position that content is not merely a vehicle for teaching reading, but that "content area reading" is a vehicle for advancing cognitive growth, language related skills, and the goal of a critical, self-directed, i.e., socially-emotionally mature, learner.

Table 1

Table 2

Table 3

Data Findings and Interpretation(s)

Re: Reading and Cognitive Development

All material examined (100% of outlines, 100% of tests, and 100% of texts) included numerous procedures developed to assist students in acquiring subject matter information and to reflect upon what they had read. These included variations of DRTA, use of study guides, structural overviews, advance organizers, and such aids and methods as would help students to set their own purposes for reading. Fundamental to these procedures seems to be the precept that for knowledge to be incorporated and retained, it must be mapped onto existing cognitive structures, and that the student must be actively engaged in the process.

Explicit dissatisfaction was noted in one course outline and one text regarding the design of materials to improve reading comprehension. Specifically assailed as inadequate in remediating faulty comprehension were kits and programmed instruction which focused on finding the main idea, making inferences, and determining sequence. This view might be generalized to others for the fact that there was a widely held view that students at the secondary level who were experiencing difficulty in comprehension were fundamentally remedial thinkers more so than were they remedial readers. This was expressed in a variety of ways, though symbolized by this statement: "Reading is not the sine qua non of leaning."

From these bits and pieces, it seems safe to conclude that reading people involved in the reading-learning process at the secondary level, agree that reading programs include attention to some of the many possible complex cognitive elements.

Re: Reading and Language

Vocabulary was the most frequent area of language development (100% of course outlines, 87% of tests, 85% of texts) included in secondary curricula. For the most part, vocabulary and cognitive growth were represented as inseparable. The prevailing thought seemed to be that acquiring additional words and new meanings for known words is a fundamental means by which to enlarge understandings of the undergirth of facts and factors around oneself. The most recommended procedures for vocabulary building were traditional. They included: activities for individualized vocabulary extension, use of contextual clues, acquisition of vocabulary pertinent to particular subject matter, and dictionary usage. There was

relatively little indication of support for a total language enrichment approach through speaking, listening, and writing. (16% of outlines, 27% of texts).

Re: Social-emotional Development

By the label, Social-emotional Development, we intended to suggest those factors, unique to the individual teacher, which likely influence her educational decision-making. Frankly, we wondered whether teachers were encouraged to examine personal assumptions and expectations in light of their influence on classroom goals and attitudes, and also, whether they were being instructed in how to promote social-emotional growth in their students.

Judging from the findings, (25% of outlines, 25% of tests, and 28% of texts) this dimension of teacher training is valued and visible in several ways. Teachers, for example, were asked to keep journals regarding their own learning and reading processes, to develop a personal philosophy of education, to list the strengths and weaknesses which they brought to the classroom and to reflect upon how they had been taught themselves. It seems that many professors believe that teachers should undergo some form of self-introspection analogous to that required of counselors and psychologists. Evidence that teachers were encouraged to promote social-emotional growth in their students is represented by the following statement from one text, "A student is responsible for his learning, for passivity is the archenemy of comprehension."

In summary, it appears as if the field of secondary reading is showing evidence of expansion well beyond narrow definitions of reading with cognitive growth, language, and elements of social-emotional development

being included in secondary reading courses in several of the institutions and texts surveyed. From this, we conclude that this constitutes a significant trend, which we project to be more fully established nationwide within the next several years.

Table 1

Summary of Course Outlines

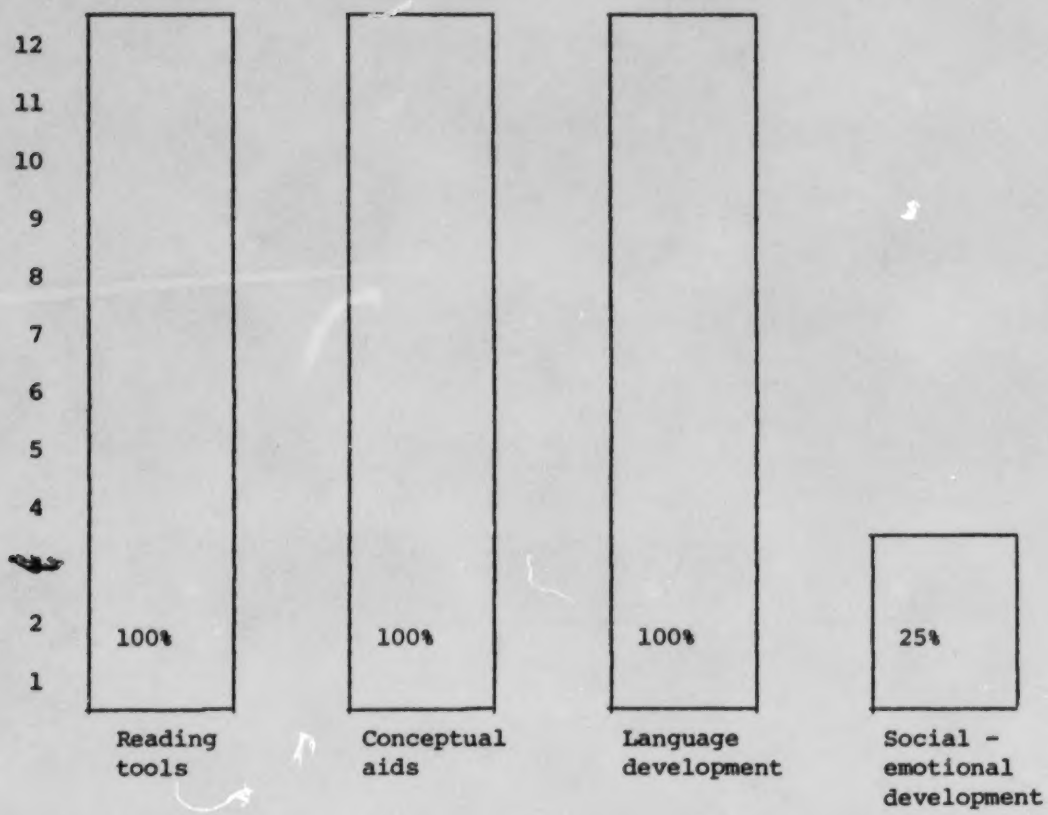


Table 2

Summary of Tests

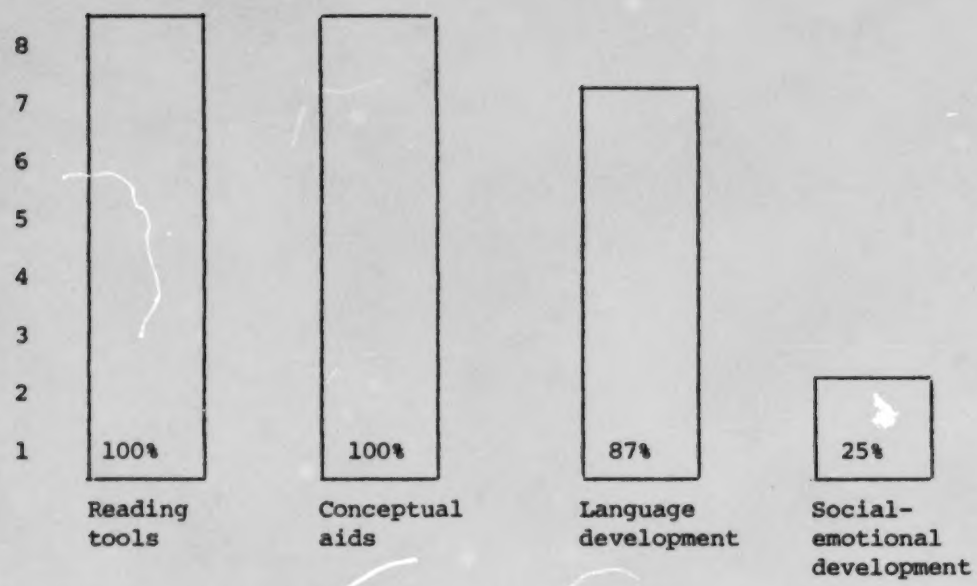
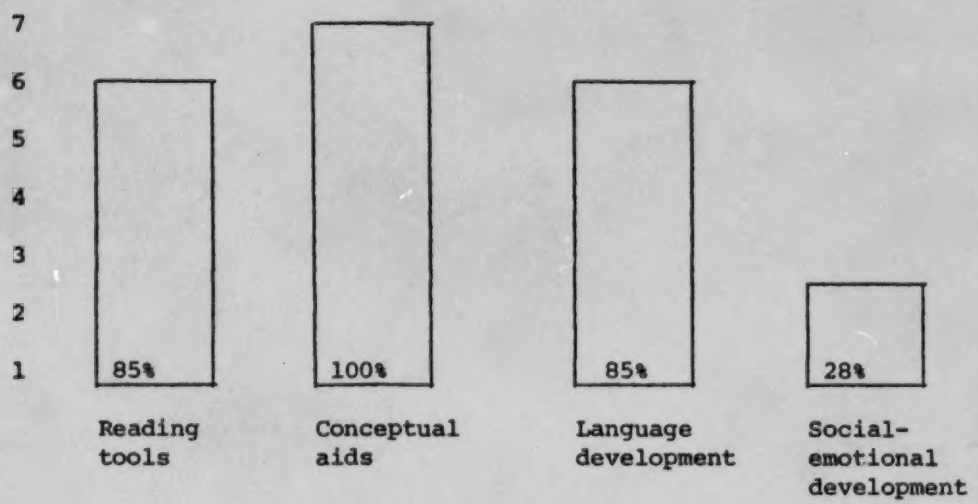


Table 3

Table of Texts



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Analyzing Reading Comprehension: An Initial Investigation of an Approach That Combines Skills Area and Concept Level Questions

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Traditionally, diagnosis of reading comprehension has primarily centered on examination of readers' responses to questions that are classified into discrete skill areas including main idea, vocabulary, facts, and inferences. Such a skills oriented perspective has often led to prescriptive instruction designed to remediate isolated, fragmented areas of a reader's comprehension.

An alternative that is beginning to receive wide-spread use is the retelling of a selection that allows a diagnostician to compare a reader's version of what was read to the original text. This more wholistic approach provides a perspective into the accuracy of recalled information and, when used with oral reading as suggested in the Reading Miscue Inventory (Goodman and Burke, 1972), such a perspective can provide a comparison of the effect of specific "miscues" on a reader's understanding of the selection.

Unfortunately, neither of these approaches to diagnosis of readers' comprehension considers the relationships or network among concepts as presented in the text or as derived by a reader who has read the text. Recent investigations into the organization of ideas in text, especially

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extended discourse, and readers' retellings of extended discourse (e.g., Meyer, 1977; Taylor, 1980) suggest that valuable diagnostic information can be derived from an examination of how a reader related various concepts to one another.

Purpose

The purpose of this paper is to describe a procedure whereby information can be elicited from readers that provides evidence of the conceptual ties and relationships that have been generated by reading a particular selection. It will further be shown that when such information is integrally related to skill area data, a diagnostician can be much more precise in an interpretation of what has been understood and why it was than through traditional approaches.

The ideas discussed within this paper have evolved largely from recent instructional research using graphic post-organizers (Barron, 1980), the ConStruct Procedure (Vaughan, 1980a, 1980b), and semantic mapping activities (Long, 1980; Armbruster and Schallert, 1980). Each of these instructional approaches is designed to facilitate students' awareness of relationships among concepts, and it seems plausible that an examination of such relationships can be extended to an analysis of readers' comprehension in such a way that teachers could obtain valuable diagnostic information.

Sample

This pilot investigation of this approach was conducted with tenth and eleventh grade students of varying reading ability in five biology classes. The students were asked to read a selection from their text that would have been assigned for homework; instead they read the assignment

in class. The selection consisted of seven pages (5928 words) of extended discourse, including diagrams, pictures, subtitles, and margin notes on the topic of "Origin of New Groups." Students were told to read the selection and that they would be given a test over it when finished. No preteaching was conducted for the selection and the regular classroom teachers gave all directions and administered the test. Students were allowed to read as in normal study situations and when they were individually ready for the test, they closed their books and asked the teacher for the test.

Construction of Test Instrument

The test was based on an analysis of the selection which included construction of a graphic post-organizer (also known as a structured overview designed after reading a selection). The graphic post-organizer was used to depict the hierarchical and parallel relationships among the concepts as they were perceived by the research team. Three general hierarchical levels of concepts were identified within this selection using the following working definitions:

superordinate concepts: within the context of a specific reading selection, superordinate concepts are those that extend throughout the selection; such concepts are usually identified as the main idea(s) of the selection;

subordinate concepts: within the context of a specific reading selection, subordinate concepts are those that, when combined, clarify or elaborate upon the more general, superordinate concept(s) with which they are closely related; these concepts can usually be identified as the critical link between the

superordinate concept(s) and the specific concepts;

specific concepts: within the context of a specific reading selection, a specific concept is a detail, example, and/or reason that clarifies or provides elaboration of higher order concepts and, when combined, provide the distinctive features of the higher order concept(s) with which it is associated; usually specific concepts are mentioned only briefly (once or twice) and are not elaborated upon to any substantial degree.

It must be noted that these are working definitions for the purpose of this paper and this investigation. The primary element in these definitions is that a concept can, in isolation, be any of the varied types described here; it is only when concepts are examined in context and in relation to one another that such labels of hierarchical arrangement can be imposed upon them.

Using the graphic post-organizer as a guide, five researchers constructed as many questions as possible using the following guidelines. Each question was to be labeled in terms of the hierarchical conceptual level it presumably represented, and each question was identified in terms of its being a factual, inferential, or vocabulary question. The working definitions for the skill area questions are as follows:

factual questions: questions for which the answer is explicitly stated within the text in the same context frame as the wording of the question;

inferential questions: questions for which the answer must be derived implicitly from the text and/or extratextual information;

vocabulary questions: questions for which answers must be derived from context and/or prior knowledge rather than from definitions stated explicitly within the text.

Inferential questions were not broken down into categories such as those proposed by Trabaso and Nicholas (1977), Flood (1977) or Frederickson (1977). Vocabulary questions for which answers were explicitly given in the text in the form of definitions were treated as factual questions; however, no such questions were used on the test in this investigation because of the controversial nature of such a definition.

The questions generated individually by each member of the research team were then compiled without identification of their conceptual level or skill area. Each researcher then independently examined each question to determine two things. First, each question was labeled according to conceptual level and skill area. Secondly, each question was rated on a scale of 1-5 according to the degree to which it was perceived as a question worth asking over the content of the selection.

The five researchers then gathered to discuss the labeling and the worthiness ratings of the questions. Among all questions, inter-rater reliability (Pearson product-moment) for conceptual level was .87; for skill area, .98; for worthiness of question, .91. A total of 141 questions were generated and all questions were of a subjective, short-answer type. Nine questions were eliminated for disagreement over conceptual level; three were eliminated for disagreement over skill area. Seventy-four questions were eliminated for reasons of duplication or a mean worthiness rating of less 3.5. The fifty-five remaining questions were classified according to nine categories: (1) factual-superordinate,

(2) inferential-superordinate, (3) vocabulary-superordinate, (4) factual-subordinate, (5) inferential-subordinate, (6) vocabulary-subordinate, (7) factual-specific, (8) inferential-specific, and (9) vocabulary-specific. After this classification, one category (inferential-subordinate) had only one question and a second question was generated by group consensus. In those three categories where only two questions existed after classification, those two were automatically chosen for the test since the test was designed to include two questions from each category. In the remaining five categories where more than two questions existed after classification, two items were randomly selected to be used on the test. The total test was comprised of 18 questions, two from each classification category, and the questions were ordered, as much as possible, in the same order in which the information appeared in the text. The test was then examined by four teachers who were graduate students in reading education. These teachers were provided with the working definitions and asked to determine the conceptual level and the skill area for each question. Three-fourths agreement was used as acceptable criteria for verification and all eighteen questions were verified as they had been identified by the research team.

Each student's test was evaluated by two researchers (interjudge reliability was .96 as determined by Pearson product-moment correlation) and in those few instances where disagreement occurred, agreement on scores for items was reached through discussion. Each item was scored on a scale of 1-10. The results were analyzed for all students and subsequently across five ability groups as determined by stanine scores from a Gates-MacGinitie comprehension subtest administered at the

beginning of the school year. The ability groups were excellent (n=12), above average (n=23), average (n=35), below average (n=20) and poor (n=14).

Results and Discussion

Analysis of the test results was conducted in three ways. First, the skill areas were examined for findings and implications; second, the concept levels were examined; third, the skill areas and the concept levels were combined.

Skill Area Analysis

Analysis of the skill area responses is reported in Table One including means and percentage scores for each mean based on total possible score in each category. Examination of those scores indicates that the

Table One

inferential comprehension for the total group is substantially higher than factual and vocabulary comprehension. More careful scrutiny suggests that vocabulary and factual comprehension are approximately equal at all levels of readers, although they are appreciably different across the various levels, and that inferential comprehension is substantially higher than vocabulary and factual comprehension among the above average, average, below average, and poor readers. Statistical analysis of these data through ANOVA and Tukey post-hoc tests confirm that these "eyeball estimates" are in fact significant ($p < .01$).

Using the traditional criteria for independent, instructional, and frustration reading levels with some allowance for measurement error, these results can be interpreted in terms of instructional implications. These teachers would be advised that this selection is of questionable

value for the total group, notably the below average and poor readers. The average and above average readers would clearly require instructional assistance, probably best prior to their reading the selection, and the excellent readers can be expected to do well on their own. Given the relationship among the inferential, factual, and vocabulary scores, the teachers should direct their attention primarily to key vocabulary assumed by the author to be known by the readers and to pointing out important factual information, perhaps after reading. Some form of study guide and/or glossary activities may be useful.

Concept Level Analysis

When the test results were analyzed in terms of scores across the three concept levels, a different picture emerges. These data are reported in Table Two again in terms of means and percentages of means compared to possible scores in each category. Analysis of the scores presented in this way indicates that for the total group, superordinate

Table Two

concepts were understood better than the two lower conceptual levels (confirming Meyer's (1977) findings). (These eyeball estimates were also verified by statistical analysis using ANOVA and Tukey post-hoc tests, $p < .05$.) More specifically, these findings hold true for all groups except the excellent readers and poor readers (where no differences occur).

Analysis of students' comprehension across these three conceptual levels suggests that the teachers would be advised to focus instructional attention to the lower level concepts, especially the subordinate ones, for all except the excellent readers. Particular attention seems

warranted for the average and below average readers in this regard and serious question must again be raised relative to the appropriateness of this material for the poor readers.

Concept Level and Skill Area Analysis Combined

Consideration of these findings separately do seem to provide different perspectives for teachers. In general, these teachers should be attentive to the unique needs of all readers and particularly those of the average, below average, and poor readers in their classes in terms of either vocabulary and facts or subordinate and specific concept levels, depending upon which set of data is examined. What, though, of a combined analysis? Is more precise information obtained from a combined analysis?

The data for a combined analysis is presented in Table Three including mean scores for the total group and percentage scores in each category.

Table Three

This combined tabulation does provide further clarification of the comprehension for the total group. For example, even though the factual comprehension score for the entire group is significantly lower than the inferential comprehension score, almost all of the comprehension of factual information has been derived at the superordinate level. Factual comprehension at the subordinate and specific levels are extremely low (8.59 (43%) and 8.39 (42%) respectively). In terms of inferential comprehension, the group indicates adequate understanding across all three conceptual levels with no significant differences across the three conceptual levels. The vocabulary scores, on the other hand, indicate a

general deficiency in terms of this author's assumptions and vocabulary should be taught across all levels. In terms of superordinate comprehension, students in these classes generally seem to require help only with vocabulary. At the subordinate level, attention should be focused on factual information and vocabulary. At the specific conceptual level, attention should be given to factual information and vocabulary.

Conclusion

The findings in this initial investigation strongly suggest that a combined analysis of reading comprehension by skill area and conceptual levels provides substantially more insight into readers' understanding than either approach alone. This is, however, only a beginning in terms of classroom use by specialists or teachers.

Substantial caution must be raised at this point for several reasons. First, this is only a preliminary inquiry into the usefulness of such an approach. Much more must be done to verify that the increased insights provided by such an approach are not simply an artifact of a particular group of students, a particular selection, or, most importantly, a particular set of questions designed over a particular selection and responded to by a particular group of students. Second, for such an approach to be of value in daily instructional settings, it assumes that the working definitions are generalizable and can be applied across various types of text, even various types of expository text. Given a larger sample of text or a different type of text, it is conceivable that the concepts presented may well apread across as many as six, eight, or even ten conceptual levels. As more levels are added, the shades of difference are likely to become less clear, and concomitantly, diagnostic findings become less clear. Third, for such an approach

to be of diagnostic value for classroom teachers, it assumes that teachers can, with minimum difficulty learn to identify conceptual relationships and conceptual levels with the same degree of reliability as experienced researchers in reading education. Fourth, given that all the preceding cautions and concerns can be resolved, is there a time factor and an availability of resources factor that would make such an approach infeasible? In effect, this study seems to have raised more questions than it has provided answers, but then that is not unexpected of an initial investigation.

Finally, if nothing else, this study may suggest that there is value in teachers' becoming aware that comprehension can and should be examined from a perspective that is broader and more complex than that of skill areas. Perhaps the most immediate value of a combined analysis approach to reading comprehension will be for researchers who are examing the intricacies of comprehension. Although many questions remain unresolved, a skill area by conceptual level analysis may offer another way to obtain a precise perspective of comprehension especially those yet unseen differences, subtle as they may be, among readers and within a reader with different texts. Only time will tell; this combined analysis approach is presented as an alternative that seems to merit further consideration.

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Table One

Means and Percentages of Skills Area Scores

		Factual*		Inferential*		Vocabulary*		Total	
n	Group	$\bar{x}$	%	$\bar{x}$	%	$\bar{x}$	%	$\bar{x}$	%
104	Total	35.96	60	45.20	75	33.26	55	114.42	64
12	Excellent	54.84	91	56.16	94	50.64	84	161.64	90
23	Above Average	42.16	70	54.16	90	41.32	69	137.64	76
35	Average	35.84	60	43.34	72	31.52	53	110.70	62
20	Below Average	28.40	47	39.10	65	24.76	41	92.26	51
14	Poor	20.86	35	34.48	57	21.94	37	77.28	43

*Total possible in each category was 60

Table Two

Means and Percentages of Concept Level Scores

		Superordinate		Subordinate		Specific		Total	
n	Group	$\bar{x}$	%	$\bar{x}$	%	$\bar{x}$	%	$\bar{x}$	%
104	Total	44.00	73	33.92	57	36.50	61	114.42	64
12	Excellent	55.14	92	51.00	85	55.50	93	161.64	90
23	Above Average	51.58	86	40.78	68	45.28	75	137.64	76
35	Average	43.88	73	32.12	54	34.70	59	110.70	62
20	Below Average	40.52	68	24.28	40	27.46	46	92.26	51
14	Poor	27.58	46	26.20	44	23.50	39	77.28	43

Table Three

Combined Analysis Means and Percentage Scores of Total Group

Concept Levels By Skill Areas

	Factual		Inferential		Vocabulary		Total	
	$\bar{x}$	%	$\bar{x}$	%	$\bar{x}$	%	$\bar{x}$	%
Superordinate	18.98	95	13.85	69	11.17	56	44.00	73
Subordinate	8.59	43	16.38	82	8.95	45	33.92	57
Specific	8.39	42	14.97	75	13.14	66	36.50	61
Total	35.96	60	45.20	75	33.26	55	114.42	64

The Language Shaping Paradigm (LSP)
for Improving Language, Comprehension, and Thought

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There are two nagging problems in trying to improve student language, comprehension and, in a sense, thought. One is to evoke a sufficient sample of such behavior to be able to edit or shape it. The second is to win student cooperation in the critical review of their personal patterns of language, comprehension, and thought.

A method for achieving these ends has been synthesized. The method is called the Language Shaping Paradigm. The most basic idea of the LSP is to connect students to the printed page through their own writing. More importantly, the method urges students to value and profit from their own thoughts and experiences.

In these respects, the Language Shaping Paradigm is cognate to two other methods. The traditional Language Experience Story...the LSP could be considered a post-elementary version of it; and, an idea called "RAMA--or Read and Meet the Author" (Santensanio, 1967). The LSP is best understood, however, as a hybrid called an 'Experience with Languaging Activity'. This notion, and the emerging educational design from which it is derived, are expanded ahead, following a full development of the Language Shaping Paradigm.

Purpose and Precepts of the LSP

The basic teaching strategy, or paradigm, is built upon having students read essays written, or dictated, by classmates. Each time the method is used some essay is treated as an important work. The essay is edited and reproduced with accompanying exercises designed to improve reading comprehension, language usage, and creative writing.

The lesson format provides several clear benefits. For one, the themes and writing samples, by their origin, represent the levels of interest and language sophistication of the class. As such, these can serve as an effective bridge to analogous materials which might be more remote and of greater language difficulty. Second, students tend to read with more enthusiasm and better comprehension. They come to the written piece with the advantage of knowing more than they typically do about the author, the context, and often, the content. In short, they have a deeper sense of "where it all is coming from". Third, the act of writing and reading about things which are of personal concern, (or things which have been veiled slightly, though still are drawn from the core of personal experiences), provides solid opportunities for incidentally helping students to clarify thoughts and feelings, and potentially to hear alternate views of how these might be perceived. Fourth, the strategy seems to provide a strong source of motivation to students to write carefully, and to permit--perhaps even to look forward to--editorial corrections, due to the probability that their work might be selected to be reproduced, and, then read by others. Related to this is a fifth point of note. Those who have read and edited each others' writings, or "plunges into the unknown", (Burton, McCarthy, et. al., 1974) form intimate and durable bonds which

could be called a social-emotional benefit, and consequent deep source of motivation as well.

This last point deserves elaboration for it touches upon an important consideration in instructional decision making. The consideration appears to require little more than a slight inversion of the most frequently asked question about a given piece of methodology. The typical question is, "what, (ostensibly), does this method 'do'?"

'Undoing' Inhibitions as a Release of Deep Motivation

The strength of the LSP, ironically, seems to be not in what it does, but in what it undoes. It appears to relieve certain inhibitions to language production and review, allowing deep felt incentives to surface naturally. The inhibitions, as near as I can understand these, essentially are two.

Things written in school tend to be too fleeting, causing students to feel as if they, themselves, are ephemeral: within 24-48 hours essays are written, handed in, returned and filed in some equivalent of a waste paper basket, never more to be considered. Actually, the latter point, is the second point: nothing important ever happens to what is written in school. Philosophically, there is little disagreement that a fundamental source of human motivation is the desire, in some way, to "leave one's footprint in the sands of time". This inner drama isn't apparent because it isn't pleasant to think about, and the opportunity to do something durable seems remote, especially when judged against the set-backs which can be expected when attempting to do somethings of consequence. Writing, the partial subject of this article, is a good example of where one's grand efforts can lead to a much bruised ego.

Anyone who has ever attempted to write for publication can attest to how humbling, if not humiliating, it can be to receive those first comments of reviewers and the subsequent quips of an editor. Similarly, few who have ever been published will deny that it was worthwhile. The printed word is durable, and potentially potent. Dramatic as it might seem, the world has been changed by it, and, too, it offers a small purchase on immortality. No one, not even a seemingly oblivious child, is insensitive or unaware of his mortality.

Bracing Theories

The notions stated above are consistent with several bracing theories. Most particularly with various "schema theories" (see Pearson, Hansen, et. al., 1979), spoken to written language theory (see Ruddell, 1965), and several theories of motivation (see Manzo, 1977). The strategy also is consistent with certain notions of bibliotherapy which are interpreted here, into a new set, which for need of a working name I have called 'scribe-therapy'. (The latter concept is being further explored and developed in a pilot graduate course for teachers called "introspectives in Reading and Learning".).

These ideas, then, provide the undergirth for the LSP.

Target Population

The LSP especially is useful with persons who have failed, are failing, or otherwise feel disenfranchised. It has proven, in this regard, to be beneficial to adults at the basic education level, to students in vocational training programs, to students for whom English is a second language, and for several students with subtle reading, learning, or emotional disorders.

A sample essay with accompanying model exercises follows a step-by-step description of the LSP.

The LSP Step-by-Step

Step 1: The LSP, ideally, should begin with a provocative discussion from which a purpose to write may be generated. (The selection treated below offers a good illustration of how this might be done.)

Step 2: Depending upon the level of sophistication of the students, the teacher may either record students' oral discourse or have students write their stories or themes as they would a conventional essay.

Step 3: The teacher selects one or two essays to be edited jointly with the student, being sure the student understands that the next step will involve having the class read his work.

Step 4: The teacher, with the possible help of the student, prepares comprehension questions on the material at a literal, interpretive, and applied level, and Language Improvement Exercises which also are hierarchical. (See illustrations.)

Step 6: The class reads the essay and completes the comprehension questions. Responses are discussed. The author is present during the discussions, though is urged to maintain a low profile to permit uninhibited interaction among class members.

Step 7: Working from the common frame of reference provided by the comprehension questions, the class turns to the Language Exercises. The author is urged to participate more openly in discussing the language exercises.

Illustration

The theme shown below is the product of one adult student who (at first) appeared to be mis-enrolled in a high school equivalency, or GED (General Education Diploma) course, as these are called. The story was generated by a discussion about dreams and their interpretation. The instructor worked individually with this student, writing his story for him as he told it. The other members of the class, who were somewhat more writing-competent, attempted to write their own stories at their desks.

The instructor and student edited the theme together until it was to the student's liking. The teacher's editorial suggestions, in this case, and in all others we have experienced, were taken in good spirit. The forthcoming "publication" of the written piece seemed to offer its own justification for such straightforward editing and correcting of the more glaring grammatical and logical inconsistencies.

I Dreamed I was Green

Author: Frank xxxx, Age 31
Kansas City, Mo.

I fell asleep last night on the couch in front of my T.V. I was watching an old movie called the "Boy with the Green Hair."

My body ached from another long day. My stomach was now working on the cornbeef and cabbage, Dynamite! The combination made me dream a strange dream. I dreamed that I woke up and had turned green. God, it was so real! At first I thought it was the light. Then I thought someone was playing a practical joke on me. But none of these things made sense. The kids were fast asleep and

my wife had not yet come home from her part-time job. She is a ticket girl at the Waldo.

I called the doctor. The answering service wanted to know what was wrong. I told them. He never called back. I went next door to my neighbor, Bud. He was shocked. He brought me to the hospital. His wife watched our kids.

The doctors said there is nothing wrong with you that we can tell, except that you are definitely green!

Now the dream gets all crazy. All I know is that I find myself planted in the backyard and beginning to look more and more like a tree. Then a lot of time passes. And the house is old and my wife and kids are gone, but I'm still in the backyard. No one seems to notice me. I'm not unhappy. I'm not happy. I'm nothing. I'm just there.

Well, that's not really true, about me just being there, I mean. There are moments when I'm very happy, like when squirrels and birds are playing on my branches. And I really feel good when I turn beautiful colors in the fall. And even though I don't like the winter, it's kind of nice to be covered with blue-white snow. February is worst. Dark and sad. But then in March I begin to swell on the inside. I feel life stirring inside me, like a woman does long before anyone even knows she is pregnant. Then April showers and then in May I bust-out of myself and turn beautiful green.

I woke up at about that time. This may sound crazy, but I was a little disappointed that I was not green.

Comprehension Check

Comprehension can be checked in most any reasonable way, except with cloze passage tests. These are not conducive to discussion of meaning. Conversely, subtleties of meaning are drawn out exceedingly well by the three-level, reading-reasoning guide described by Herber (1970). A full guide on "I Dreamed I was Green" is detailed below.

Level I - Literal Comprehension

Directions: Decide whether the following statements are like those made in the story. Circle the T for True or the F for False. You may look back to the story to answer these questions. Write the number of the line(s) which helped you answer each question.

T F 1. The kids woke me from my dream by the racket that they were making. (line ___)

T F 2. Thank goodness for the help of my neighbor, Fran. (line ___)

T F 3. My neighbor was shocked to see that I was green. (line ___)

T F 4. February is best. I love the blue-white snow. (line ___)

Level II - Literal to Interpretative Comprehension

1. What was the man who wrote this article doing when he fell asleep?

2. What is the first thing this man did when he realized that he had turned green?

3. Find the line in the story which tells the kind of work the "green man's" wife does. What is the name of the place she worked it? What kind of place do you think it is?

4. What is another word for "working" in the sentence below?
"My stomach was now working on the cornbeef and cabbage."

5. Why do you suppose the writer of this story dreamed that he was green?

6. Do you think that you would like to have the man who dreamed he was green as a friend? Why?

7. Did you like this man's story? What part did you like best or least?

8. Does dreaming, in your opinion, serve any useful purpose? Can it be bad for you?

Level III - Interpretative to Applied Comprehension

Consider carefully the statements below. In column A answer yes if you think the writer of the story might believe the statement or no if you think he would not. In column B indicate which line or lines from the story helped you decide on your answer.

A yes/no	B Line(s)	Statements
		1. I hate boiled food.
		2. A man needs friends.
		3. Doctors aren't really much good.
		4. I am nothing but a vegetable.
		5. I really don't like kids much.
		6. Nature is refreshing.
		7. Only jerks go out of their way to look different.
		8. Life has its ups and downs.
		9. Dreaming isn't good for you.
		10. I sure wish things wouldn't change as much as they do.

The recording, editing, and comprehension check treatments of a single student theme, in itself, could stand as a worthwhile lesson activity. In this case, it serves as a solid schema, or knowledge basis, for the language shaping exercises.

Language Development Exercises

The writing, or language, shaping exercises detailed below originally were fashioned to the needs of the GED class with whom I first piloted the LSP (about 10 years ago). Since that time teachers have emp'oyed the same paradigm successfully from fifth grade through high school levels.

Three hierarchical exercises are illustrated; the first two have tended to generate the most response and discussion. This may be because Levels One and Two are more specific in what is required.

It is significant that the students who could not, or would not, venture an effort on the first trial, with the level three exercises, did attempt the more difficult exercise by their very next experience with the LSP.

Language Improvement Exercises

Level I

Choosing More Appropriate Words

Sometimes replacing (or modifying) a few words in a paragraph can improve greatly the clarity and sharpness of an essay. Carefully study the paragraph below. Decide which of the underlined words you would replace from the list of words in the left column.

I called[1] the doctor. The answering service wanted to[2] know what was wrong. I told them. He[3] never called back. I went next door to my neighbor, Bud. He was shocked. He[4] brought[5] me to the hospital. His wife watched[6] our kids.

Replacement Words	I (1) _____ the doctor. The
spoke to phoned asked the doctor Bud drove looked after told	answering service (2) _____ what was wrong. I told them. (3) _____ never called back. I went next door to my neighbor, Bud. He was shocked. (4) _____ (5) _____ me to the hospital. His wife (6) _____ our kids.

Level II

Improving Style/Mood

"I Dreamed I was Green" is written in a half-humorist, half-serious vein. That is to say, the language is quite casual. Decide which of the sentences below best matches the mood of "I Dreamed I was Green". Underline the words, phrases and/or punctuations which seem to contribute to, or take away from that mood. Write "I" for improved, "N" for not. (Number one is done as an example.)

____ 1. I called on the doctor's answering service to see if I could get his opinion on why I might be green.

____ 2. I called the doctor. Naturally, I got some corny answering service.

____ 3. I went next door to my neighbor, Bud. He was shocked.

____ 4. Bud's wife, Martha, volunteered to look after the children while I was at the hospital.

____ 5. You guessed it, the doctor never called back.

Level III

Rewriting or Reorganizing

Do A or B

A. Pretend that you are the author of this article and rewrite the paragraph between lines 10 and 25 in a way that you believe would improve it.

B. Reorganizing. Can you see any means by which this piece can be re-ordered so that the basic story remains the same, but the effect is more imaginative or stylish? (You may rewrite small sections, if necessary, to accomplish this.)

An Experience with Languaging Activity

In several ways the Language Shaping Paradigm epitomizes the 'third generational approach' to teaching reading at the post-elementary levels recently described by Manzo and Sherk (1978). This approach, which we have called the Languaging in the Content Areas or LICA design, advocates for an expanded version of 'concurrent methods'. Instead of attempting to improve, simultaneously, combinations of reading, language, content, thought, and aspects of social-emotional growth.

Activities of the type described above can be subcategorized as ELA's--or Experience with Languaging Activities. This code name seems necessary to express the emerging realization that thought and language enrichment should be the central concerns of most lesson plans; and that the lesson activities of the secondary and post-secondary school situation need to be so oriented and organized. Too, the label "ELA's" seems to help to distinguish this notion from those implicit in its elementary school counterpart, the Language Experience Activity (or Story).

Facets of the notion of ELA's, as noted, still are emerging. Some of the differences between the ELA and LEA, however, are relatively clear. Language Experience Stories tend to be recorded and left unedited. ELA's are teacher-student edited, then read and critiqued in a structured way by the class. Thus, in a typical LEA, language is used as a bridge to reading, and as a means to record experienced in "crude" form. ELA's begin in much the same way, however, ELA's use language as a bridge to deeper exploration and understanding of experiences, and then, inverting, use the clarified experiences as a means to better explore and achieve precision in language.

The differences between an ELA and an LEA often appear clearest when this question is raised: "What, primarily, is the activity likely to promote?" If the answer is "the improvement of language so that one might learn how to read", then it probably is a traditional LEA. If the answer is that it will "promote 'progress toward reading-language-thinking and social-emotional maturity' (Manzo and Casale, 1979)", then it probably is an ELA.

It might seem odd to advocate for an ELA as a method for teaching reading to adults and youngsters who have failed to learn how to read even to a functional level. There is no paradox, however, when it is realized

that failure to learn to read, where there was opportunity to do so, can only be called a dysfunction; that is, an emotional convolution of thought, rather than a disfunction, in the sense of an unlearned or slightly tarnished level of functioning.

It is in an effort to correct better such dysfunctions, or mental misfirings, that ELA's generically, and the LSP (and potentially 'scribe-therapy'), specifically are advocated for wider use, and further research and development.

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Reading Comprehension of Anaphoric Syntactic Structures by Vietnamese Bilingual Students in High School

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Successful reading comprehension performance in a native language involves linguistic and non-linguistic factors. Reading is an interactive process whereby the reader's prior knowledge of the world and linguistic awareness affect the interpretation gained from the text (Rummelhart, 1975; Anderson, 1977). Yet many native speakers of languages other than English may have specific difficulty comprehending written English because of cultural differences (C.F. Steffensen, Anderson and Joag-Dev, 1980) and/or language interference (Cowan, 1976). While a research tradition of text comprehension by native English speakers has been established, comparatively fewer experimental psycholinguistic studies have been undertaken to examine the effects of syntactic variables on the reading comprehension of the non-native English speaking reader. Furthermore, claims about language interference in reading are often contradictory.

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Cowan (1976) claimed that perceptual strategies (C.F. Bever, 1970) are dependent upon the grammars of individual languages. As grammars vary across languages, differences could affect the syntactic processing strategies for reading comprehension. Yet, Wilson (1970), for example, claimed that language contrasts between Vietnamese and English did not affect the reading performance of students in college E.S.L. (English as a Second Language) classes. However, Lee (1976) claimed that language and cultural differences are factors in learning to read English as a second language. Very little is known about the effects of text characteristics on the performance of Vietnamese bilinguals. The present paper will discuss a psycholinguistic experiment designed to examine the effects of selected anaphoric structures (pronoun-referent structures) on the comprehension of Vietnamese high school students.

A large body of research on the comprehension of anaphora has been generated during the past decade. (See extensive reviews by Nash-Webber, 1977 and Barnitz, 1978). A few of the findings of recent studies can be mentioned to illustrate the syntactic effects on childrens' reading comprehension of English as a first language. Richek (1977) demonstrated that third graders had less difficulty comprehending sentences like (John saw Mary and John said hello to Mary.) than the corresponding sentences like (John saw Mary and he said hello to her.). Likewise, Barnitz (1980) demonstrated that children in grades two, four and six generally had more difficulty comprehending pronoun reference in which the pronoun referred to a sentential referent rather than a noun phrase referent; and, had more difficulty comprehending pronoun reference in which the pronoun preceded its referent rather than following its referent. While Barnitz further

claimed that pronoun comprehension ability is generally acquired by the junior high grades, Gottsdanker (1979) found that the number of pronouns of a passage, affecting the redundancy of information conveyed, affected the reading comprehension of eighth grade readers. Thus, previous research demonstrated that the syntax of anaphora is a crucial variable in text comprehension.

While a tradition of text comprehension by native English readers has been established, hardly any experimental studies have been conducted on the effects of anaphoric structures on the reading comprehension of bilingual readers in general, and native Vietnamese speakers in particular.

The purpose of the following experiment was to investigate the effects of selected pronoun-referent syntactic structures on the reading performance of native Vietnamese high school students. Comparisons were made along three syntactic dimensions of anaphora.

REFERENT TYPE: Will noun phrase referents be easier to recall/ comprehend than sentential referents?

Examples: John and his father wanted to buy a large train set, because it was on sale. (NP, FW)

Mary rides her skateboard in the busy street, but Marvin does not believe it. (S, FW)

REFERENCE ORDER: Will structures in which the referent precedes the pronoun (forward reference) be easier to recall/ comprehend than structures in which the pronoun precedes its referent (backward reference)?

Examples: Because it was on sale, John and his father wanted to buy a large train set. (NP, BW)

Marvin does not believe it, but Mary rides her skateboard in the busy street. (S, BW)

REFERENT DISTANCE: Will passages containing structures in which the pronoun and referent are intra-sentential be easier to recall/comprehend than passages containing inter-sentential pronoun-referent structures?

Example: John Boy and Mr. Walton went hunting for a rattlesnake in the woods. Mr. Walton was almost bitten by it.

(Other examples listed above are Intra-S.)

This study will shed light on the relative difficulty of syntactic structures in reading comprehension.

Method

Materials

The materials were previously used in an experiment with native English speaking children in grades two, four and six (Barnitz, 1980). Target syntactic anaphoric structures were constructed by combining the features of reference: Referent Type (NP, S), Reference Order (FW, BW), and Referent Distance (Intra-S, Inter-S). Experimental passages were constructed according to the passage design matrix in Figure 1. Four passages were constructed for each target structure type down a column. Parallel passages constructed varying with the features of reference order (forward reference vs. backward reference), were also developed in order to control for some of the potential effects of content on the comprehension of the target structure. An example of one of the passages is listed below:

> John and his father went to the hobby shop to look at things to make and play with. Because it was on sale, they wanted to buy a large train set. John also saw a model airplane and a racing car set which cost too much money. John's father told him to wait until next Christmas for some of the toys.
>
> What was on sale? NP (BW, Intra)

Note that every structure will have a feature from the three categories of reference: type, order and distance.

The parallel passages varying in forward and backward reference were alternately assigned to two forms of experimental booklets. Each booklet contained eight forward and eight backward reference order structures; but no booklet contained the two versions of the same story. Each passage was printed on a half sheet of paper followed by another sheet containing a question based on the target structure. In order to control for ordering effects, two orderings of the experimental passages were selected for each booklet.

Subjects

Protocols of fifty-six Vietnamese students enrolled at two high schools located within a seventy-five mile radius of a university in a major Southern city were incorporated in the analysis. Thirty-nine of the students indicated on a questionnaire that Vietnamese is the home language; sixteen indicated that both English and Vietnamese are used at home; and one indicated that English is the home language. As there was no large sample for any particular grade level, subjects were pooled from grades nine through twelve. Nine subjects were enrolled in grade nine, twenty-four in grade ten, thirteen in grade eleven, and ten in grade twelve. Ages of subjects ranged from fourteen to twenty years with the general average of sixteen years.

Procedures

Subjects were tested in groups by one or two investigators. The subjects were told that the purpose of the experiment was to understand how difficult the stories can be for Vietnamese students to read. The directions were explained in English by the investigators. In addition, a taped summary of the procedures was also presented in Vietnamese.

Scoring

A binary scoring procedure was used in order to distinguish between a response giving the correct referent or a paraphrase of the referent (correct = 1) and a response giving the wrong referent or leaving the question unanswered (incorrect = 0).

Analysis

An analysis of variance for the repeated measures design was applied to the data in order to determine the effects of the three major linguistic variables (referent type, reference order, referent distance) and any possible interactions of these variables. Means correct were also calculated and compared in order to establish a ranking of difficulty for each pronoun-referent structure in passages of text.

Results

An analysis of variance in the repeated measures design were performed on the data and is summarized in Table 1. Orthogonal contrasts were also created for the analysis. Three significant main effects were found for referent type, $F(1,385) = 7.25$, $p < .01$, reference order, $F(1,385) = 11.19$, $p < .01$ and referent distance, $F(1,385) = 12.32$, $p < .01$. The table of means (Table 2) illustrates that passages with noun phrase pronoun-referent structures have significantly higher scores than passages with sentential pronoun-referent structures ($.67 > .57$). Passages with structures containing forward reference order had significantly higher scores than passages containing backward reference order ($.68 > .57$). Passages with structures containing intra-sentential structures had significantly higher scores than passages with inter-sentential structures ($.66 > .58$). A significant interaction occurred for reference order x referent distance. The means

in Table 3 illustrate that forward reference is greater than backward reference in the cells containing intra-sentential structures, but not necessarily in the inter-sentential structures cells. In some passages, the opposite trend is apparent. The means in Table 3 further illustrate much variability from passage to passage, thus suggesting potential effects of the passage content or cultural knowledge of the readers.

The means for the combinations of syntactic variables for each target structure type are summarized in Table 4. The structure NP (FW, Intra) was the combination which was answered correctly most frequently, suggesting its relative ease of comprehensibility. On the other hand, the structure S (FW, Inter) was answered correctly the least frequently. The array of structures, in general, illustrates the trend that forward reference has higher scores than backward reference, noun phrase referents more than sentential referents, and intro-sentential reference more than inter-sentential reference. However, combinations of these features affected the score for each target structure, with passage specific variations.

Discussion

The experiment demonstrated significant effects of syntactic variables on the comprehension of anaphoric structures by Vietnamese high school students. Sentential referents, backward reference, and intersentential reference were generally more difficult to comprehend than noun phrase referents, forward reference and intrasentential reference, respectively. These findings demonstrate that text structure variables are, in themselves, important to comprehension. The results, in general, are in line with previous research on the effects of syntax on comprehension (Bormuth, Manning, Carr and Pearson, 1970; Lesgold, 1974; Richek, 1977). While the

Vietnamese subjects did display difficulty with anaphoric text variables, the results do not necessarily suggest that the potential difficulty with anaphora is attributable to the syntactic contrasts in the discourse structure of English and Vietnamese. The results regarding referent type and reference order are similar to some of the results of a previously conducted study involving children in grades two, four, and six, who read the same materials (Barnitz, 1980). For the native English speaking children, noun phrase referents were more frequently recalled than sentential referents. Likewise, passages with forward reference order were generally more frequently recalled than passages with backward reference order. This suggests the possibility that specific text variables make a contribution to the comprehensibility of passages independent of the population of subjects. Much more research is needed to affirm this assertion. However, for the native English speaking children, the referent distance variable was nonsignificant, although a significant interaction did occur between referent type and referent distance. Again, more research is needed to explain why this interaction did not occur in the vietnamese study. The role of each syntactic variable in the reading comprehension of Vietnamese students will now be discussed.

Along the dimension of referent type, passages with noun phrase referents had higher scores than passages with sentential referents. At least three reasons can account for this outcome. In general, sentence pronominalization involves more complex constituent structure than noun phrase pronominalization. This explanation is congruent with the theory of syntactic complexity. Syntactically more complex structures are more difficult to produce or comprehend than simpler structures (C.F. Fodor and Garrett, 1967). Another reason for the outcome, sentence pronominals,

which have more structure and information, require more effort on memory. A third possible explanation is that, as speculated in Barnitz (1980), the acquisition of sentence pronominalization follows the acquisition of noun phrase pronominalization in stages of development in English as a first language. Yet, more research is needed to examine the developmental stages in second language acquisition in order to make the same claim for the Vietnamese speakers. Nevertheless, the reading comprehension of the Vietnamese students, like that of native English speaking children, was affected by the referent type variable.

The second syntactic variable examined in this study was reference order. Vietnamese students comprehended more frequently passages containing forward reference than passages containing backward reference. This outcome supports the validity of syntactic processing strategies (C.F. Bever, 1970; Cowan, 1976) which implies that the order "referent-pronoun" would be more predictable and natural than the order "pronoun-referent" in both languages. Similarly, the forward referent structures are less transformationally complex than backward referent structures (Langacker, 1969; Ross, 1969). Another explanation for this outcome is that backward reference generally violates a "pragmatic" principle of discourse. Generally, backward reference can occur only if the information is predictable from the context. A left hand noun phrase cannot be pronominalized unless its referent is predictable from the previous context (Kuno, 1972, 1975). Thus, backward reference order would generally be difficult to comprhend if the predictability requirement is violated. Thus, Vietnamese readers and the children in the previous study (Barnitz, 1980) would naturally be expected to comprehend forward reference much more easily than backward reference.

However, the fact that Vietnamese students read with more difficulty passages with backward reference does not suggest the role of the language contrasts between Vietnamese and English as the source of difficulty. Rather, the specific text variables are the cause of difficulty.

The third syntactic comparison involved the dimension of referent distance. In the Vietnamese study, intro-sentential structures were more frequently comprehended than intersentential structures. This outcome supports the "minimal distance principle" in language comprehension (C.F. C. Chomsky, 1969; Richek, 1976). In other words, co-referents which are closer to each other will more likely be comprehended than co-referents which are most distant. Perhaps, it is in this area that language interference may be more crucial. Intervening content or syntactic structures may serve as distractors of reading comprehension, causing the Vietnamese subjects to stumble more frequently with inter-sentential structures. Much research based on contrastive analysis is needed here.

It should be mentioned that in the study with native English speaking children, the referent distance variable was not significant, although there occurred a significant interaction of referent type x referent distance. Forward reference was especially easier to comprehend than backward reference for intra-sentential structures, but not necessarily for the inter-sentential structures. No theoretical explanation is possible for this interaction, except that the semantic content of the specific passages may have interacted with the syntactic combinations. More research is definitely needed in this area.

Conclusion

This experiment was an exploratory study designed to examine the effects of syntactic aspects of anaphora on the reading comprehension of Vietnamese students in high school. The syntactic variables of Referent Type, Reference Order, and Referent Distance were shown to have effects on second language reading comprehension. At this time, it is not appropriate to infer language interference as the primary reason explaining the results, especially because Referent Type and Reference Order were significant variables in an earlier study on the reading comprehension of children in grades two, four and six (Barnitz, 1978, 1979, 1980). Further studies need to be conducted involving both English and Vietnamese subjects of the same age or grade levels in order to determine which aspects of comprehension ability is attributable to language contrasts and which is attributable to text structure variations. Moreover, the interaction of syntax and cultural background needs to be examined in order to truly understand bilingualism and reading comprehension.

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Figure 1

Experimental Passage Design Matrix

STRUCTURAL FEATURES	STRUCTURAL FEATURES
NP(FW, INTRA) INTRA-SENTENTIAL NP PRONOMINAL FORWARD	NP(BW, INTRA) INTRA-SENTENTIAL NP PRONOMINAL BACKWARD
NP(FW, INTER) INTER-SENTENTIAL NP PRONOMINAL FORWARD	NP(BW, INTER) INTER-SENTENTIAL NP PRONOMINAL BACKWARD
S(FW, INTRA) INTRA-SENTENTIAL SENTENCE PRONOMINAL FORWARD	S(BW, INTRA) INTRO-SENTENTIAL SENTENCE PRONOMINAL BACKWARD
S(FW, INTER) INTER-SENTENTIAL SENTENCE PRONOMINAL FORWARD	S(BW, INTER) INTER-SENTENTIAL SENTENCE PRONOMINAL BACKWARD

Table 1

Analysis of Variance

Summary of Findings

	SS	df	MS	F	W^2
Between Subjects					
Booklets	1.88	1	1.88	1.0	
Subjects within Booklets	118.00	54	2.18		
Within Subjects					
Referent Type (R)	2.43	1	2 43	7.25*	.016
ɔference Order (O)	3.75	1	3.75	11.19*	.024
Referent Distance (D)	4.13	1	4.13	12.32*	.027
O X D	9.43	1	9.43	28.14*	.059
O X R	.11	1	.11	<1.0	
D X R	.50	1	.50	1.49	
O X D X R	.27	1	.27	<1.0	
Error	129.00	385	.34		
Total	269.50	447			

*p < .01

Table 2

Mean Proportion Correct on Major Linguistic Variables

Reference Variable	Proportion Correct
Referent Type	
NP	.67
S	.57
Reference Order	
FW	.68
BW	.57
Referent Distance	
Intra-S	.66
Inter-S	.58

Table 3

Means Correct for Each Passage Within

Each Syntactic Combination

Passage	Target Structure		Passage	Target Structure
	NP(FW, INTRA)			NP(BW, INTRA)
1A1X	.90		1A2Y	.61
1B1Y	.81		1B2X	.53
1C1X	.90		1C2Y	.38
1D1Y	.73		1D2X	.60
	NP(FW, INTER)			NP(BW, INTER)
2A1X	.70		2A2Y	.69
2B1Y	.23		2B2X	.30
2C1X	.83		2B2Y	.80
2D1Y	.73		2D2X	.87
	S(FW, INTRA)			S(BW, INTRA)
3A1X	.80		3A2Y	.53
3B1Y	.61		3B2X	.43
3C1X	.83		3C2Y	.53
3D1Y	.69		3D2X	.53
	S(FW, INTER)			S(BW, INTER)
4A1X	.53		4A2Y	.50
4B1Y	.23		4B2X	.40
4C1X	.57		4C2Y	.61
4D1Y	.61		4D2X	.60

Table 4

Hierarchy of Comprehension Difficulty for

Pronoun-Referent Structures for Vietnamese Subjects

Structure	Mean Correct
NP(FW, INTRA)	.839
S(FW, INTRA)	.741
NP(FW, INTER)	.664
NP(FW, INTER)	.661
NP(FW, INTRA)	.535
S(BW, INTRA)	.535
S(BW, INTER)	.527
S(FW, INTER)	.491